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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,922	08/07/2003	Naum Chernoguz	CHERNOGUZ1A	8860

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EXAMINER	
BERHANU, ETSUB D	

ART UNIT	PAPER NUMBER
3735	

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/635,922	CHERNOGUZ ET AL.	
	Examiner	Art Unit	
	Etsub D. Berhanu	3735	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08/07/2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08/07/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/06/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 1, 12, 16, 21, 26, 30 and 31 are objected to because of the following informalities: line 20 of claim 1, line 7 of claim 30 and line 27 of claim 31 should read "both include applying an adaptive resonator", line 2 of claims 12 and 26 should read "configured for separation of optic channels from each other", line 9 of claim 31 should read "computer readable program code for causing the computer to analyze", and claims 16 and 21 should end in a period. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Lines 22-27 of the specifications define a serial operation mode regime as one where each of a group of LEDs oscillates over a certain period while the other LEDs are kept inactive. Lines 16-18 of the specifications define a parallel mode regime as one where LEDs are activated concurrently, but with different modulation rates. Claims 1, 16, 30 and 31 claim a composite mode regime employing a combination of parallel and serial mode regimes. According to the specifications, it is not possible to have a combination of parallel and serial modes because that would require one LED to be active while the rest are inactive (serial mode), while the parallel mode regime would require all of the LEDs to be activated at the same time. It is best understood that only one of the parallel or serial modes is employed in the current invention.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-4, 7-18, 21, 22 and 24-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiani-Azerbayjany et al.'516 (US Patent No. 6,151,516) further in view of Yelderman'543 (US Patent No. 5,193,543).

Regarding claims 1-4 and 7-15, Kiani-Azerbayjany et al.'516 discloses a method for decomposition of a multiple channel signal comprising: illuminating a portion of a medium by light of more than two different optic channels (col. 8, lines 1-20); sensing a light response of the medium and generating a multiple channel signal (col. 8, lines 28-33); analyzing the multiple channel signal by filtering the multiple channel signal and separating at least part of the multiple channels from each other (Figure 3, element 300 and Figure 6, element 421); providing time evolutions of the light responses of the medium wherein the amplitude-modulated light is activated in a composite mode regime, as best understood according to paragraph 3, wherein the composite mode regime is a short serial mode regime

representing at least one on-off ignition cycle (col. 9, lines 25-31); filtering the multiple channel signal and separating the multiple channels from each other by applying a closed loop adaptive resonator bank to the multiple channel signal (Figure 2, elements 330, 332 and 334), wherein the resonator bank is configured to filter out disturbances of the signal, including noise (col. 12, lines 24-29); deriving a glucose concentration as a relation between different time evolutions of the light responses of the medium (Figure 8); digitizing the multiple channel signal (Figure 2, element 332); sampling the multiple channel signal (col. 12, lines 62-67); decimating the multiple channel signal (Figure 5, element 402); and filtering sinusoid signals corresponding to the optic channels and obtaining light intensity signals (Figure 3, element 300).

Regarding claims 16-18, 21, 22, and 24-31, Kiani-Azerbayjany et al.'516 discloses a system for measuring glucose concentration comprising: a generator coupled to a MUX for activating pulses in a short serial mode regime representing at least one one-off ignition cycle (col. 8, lines 51-57 and col. 9, lines 25-31); a probe including an illumination assembly having a plurality of light sources coupled to the MUX and a photodetector adapted for sensing a light response and generating a multiple channel signal (Figure 2, element 300); an analyzer having a closed loop adaptive resonator bank (Figure 2, elements 330, 332 and 334), wherein the resonator bank is configured to filter out disturbances of the signal, including noise (col. 12, lines 24-29), and an output filtering unit (Figure 8, elements 488, 492, 490 and 494); an analog-to-digital converter (Figure 2, element 332); a first decimator for decimating the signal after an initial high-rate sampling (Figure 5, element 402); a synchronization provided between the illumination assembly and adaptive resonator bank (col. 14, lines 7-25); and a program storage device readable by machine, embodying a program of instructions executable by the machine to perform method steps for decomposition of a multiple channel signal and a computer program product comprising a computer useable medium having computer readable program code for causing the computer to analyze the multiple channel signal (col. 13, lines 17-36).

Kiani-Azerbayjany et al.'516 discloses all the elements of the current invention, as discussed above, except for illuminating a portion of the medium by amplitude-modulated light.

Yelderman'543 teaches improving the signal to noise ratio, and resistance to interference from ambient artificial light and BOVIE interference of a blood constituent measuring apparatus and method by using amplitude modulation/demodulation techniques on the light to be transmitted through the body (col. 3, lines 5-17).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the illumination portion of Kiani-Azerbayjany et al.'516 to include amplitude-modulated light, as taught by Yelderman'543, since amplitude modulation would improve the signal to noise ratio and resistance to different types of interference.

Allowable Subject Matter

7. The following is a statement of reasons for the indication of allowable subject matter: None of the prior art teaches or suggests, either alone or in combination, a method or system for decomposition of a multiple channel signal for determining at least one blood parameter that includes activating light in either a short serial-parallel mode regime or a mixed-rate short serial mode regime, in combination with the other claimed steps or elements. Further, none of the prior art teaches or suggests, either alone or in combination, a system for decomposition of a multiple channel signal for determining at least one blood parameter that includes a second decimator configured for outputting time evolutions of light responses at a lower sampling rate, in combination with the other claimed steps or elements.

8. Claims 5, 6, 19, 20 and 23 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Etsub D. Berhanu whose telephone number is 571.272.6563. The examiner can normally be reached on Monday - Friday (Every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia Bianco can be reached on 571.272.4940. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EDB

ERIC F. WINAKUR
PRIMARY EXAMINER